

---

Logistics Management Institute

Should the Department of  
Defense Transfer the Defense  
Logistics Agency's Map  
Functions to the Defense  
Working Capital Fund?

DL002T1

March 2000

Dennis Zimmerman  
Peter Raymond  
Jeffery Bennett

DTIC QUALITY INSPECTED 2

20000512 008



# REPORT DOCUMENTATION PAGE

Form Approved  
OPM No.0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources gathering, and maintaining the data needed, and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

1. AGENCY USE ONLY (Leave Blank)		2. REPORT DATE Mar 2000	3. REPORT TYPE AND DATES COVERED Final
4. TITLE AND SUBTITLE  Should the Department of Defense Transfer the Defense Logistics Agency's Map Functions to the Defense Working Capital Fund?			5. FUNDING NUMBERS  GSA Contract GS-23F-9737H  Purchase Request: LSO2A2DCP25MS
6. AUTHOR(S)  Dennis Zimmerman, Peter Raymond, Jeffery Bennett			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  Logistics Management Institute 2000 Corporate Ridge McLean, VA 22102-7805			8. PERFORMING ORGANIZATION REPORT NUMBER  LMI- DL002T1
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)  Defense Logistics Support Command (DLSC-BR) 8725 John J. Kingman Road Fort Belvoir, VA 22070			10. SPONSORING/MONITORING AGENCY REPORT NUMBER
11. SUPPLEMENTARY NOTES None			
12a. DISTRIBUTION/AVAILABILITY STATEMENT  A: Approved for public release; distribution unlimited			12b. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 words)  Currently the Defense Logistics Agency (DLA) performs materiel management functions for map products. The functions cost about \$25 million annually and are funded by operations and maintenance (O&M) dollars. This study analyzed if the functions should be transferred to the Defense Working Capital Fund (DWCF). Based on findings presented in this report, the study recommends that DLA map functions remain O&M-funded and outside the DWCF. However, if the Department of Defense (DoD) decides to transfer DLA map functions to the DWCF, the best option for cost recovery is to transfer O&M funding to the National Imagery and Mapping Agency (NIMA) and permit DLA to charge NIMA for its services. The next best option is to transfer O&M funding to the military services, Defense agencies, and NIMA (for non-DoD customers, including foreign customers) and permit DLA to bill each organization at a summary level. The least preferred option would be to transfer O&M funding to individual customers and permit DLA to bill them for the map products they receive.			
14. SUBJECT TERMS map, distribution, Defense Working Capital Fund			15. NUMBER OF PAGES 50
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL

# Should the Department of Defense Transfer the Defense Logistics Agency's Map Functions to the Defense Working Capital Fund?

DL002T1

March 2000

Dennis Zimmerman  
Peter Raymond  
Jeffery Bennett

Prepared for the Department of Defense pursuant to GSA Contract GS-23F-9737H. The views expressed here are those of the Logistics Management Institute at the time of issue but not necessarily those of the Department of Defense. Permission to quote or reproduce any part except for government purposes must be obtained from the Logistics Management Institute.

LOGISTICS MANAGEMENT INSTITUTE  
2000 CORPORATE RIDGE  
MCLEAN, VIRGINIA 22102-7805

Should the Department of Defense Transfer the  
Defense Logistics Agency's Map Functions to the  
Defense Working Capital Fund?

DL002T1/MARCH 2000

## Executive Summary

This study examines the funding of materiel management functions that the Defense Logistics Agency (DLA) performs for map products. Currently, the functions cost about \$25 million and are funded by operations and maintenance (O&M) dollars. The question is, Should the functions be transferred to the Defense Working Capital Fund (DWCF)?

On April 1, 1998, DLA assumed the mission of performing supply management, distribution, and cataloging functions for map products. The functions were transferred from the National Imagery and Mapping Agency (NIMA) because DLA is the Department of Defense (DoD) wholesale manager for consumable items as well as the DoD manager for materiel distribution. However, when the map functions were transferred, they were O&M-funded and have remained O&M-funded, although DLA performs similar functions for other items under the DWCF.

In transferring the map functions to DLA, Program Budget Decision No. 070 directed that DLA study a fee-for-service policy for map products and provide a report with recommendations to the Under Secretary of Defense (Comptroller). DLA contracted with LMI to conduct the study.

We analyzed the status quo and three alternatives:

- ◆ Transfer functions to the DWCF and recover costs by charging individual customers.
- ◆ Transfer functions to the DWCF and recover costs by charging the military services, Defense agencies, and others at a summary level.
- ◆ Transfer functions to the DWCF and recover costs by charging NIMA.

In assessing the feasibility of each alternative, we considered DWCF financial management criteria, statutory and international requirements, and potential technical or operations problems. We also considered the effect of the alternatives on

map customers and their support. Finally, we examined the potential costs and benefits of a transfer.

Based on our findings, we conclude that DLA map functions should remain O&M-funded for these reasons:

- ◆ DLA map functions do not satisfy the four criteria for being a DWCF entity.
- ◆ Transferring map functions to the DWCF would provide little or no savings and would not improve customer support.
- ◆ Transferring map functions to the DWCF would require a costly and possibly uneconomical financial software modification or a complete software system replacement.

However, should DoD decide to transfer DLA map functions to the DWCF, the best option is for DLA to charge NIMA for its services for these reasons:

- ◆ Since most map products are ordered through NIMA accounts, NIMA would receive the majority of the DLA charges in any alternative.
- ◆ This alternative could create a relationship where NIMA has the flexibility to seek other sources for the services that DLA provides if DLA cannot keep its costs down.
- ◆ NIMA's large total obligational authority would provide greater flexibility for dealing with surges in the demand for map products.

# Contents

---

Chapter 1 Overview .....	1-1
GENESIS OF THE STUDY .....	1-1
WHAT WE DID .....	1-2
Our Objectives.....	1-2
How We Approached the Problem.....	1-2
Assumptions .....	1-2
WHAT WE FOUND .....	1-3
Can DLA Transfer Its Map Mission to DWCF? .....	1-3
Will Map Customers Be Adversely Affected If the DLA Map Mission Becomes Part of the DWCF? .....	1-4
Will the DLA Map Mission Operate Better as Part of the DWCF?.....	1-5
CONCLUSIONS AND RECOMMENDATION .....	1-6
REMAINDER OF THIS REPORT .....	1-7
Chapter 2 DLA Map Mission.....	2-1
BACKGROUND .....	2-1
Key Elements of the 1998 Mission Transfer.....	2-1
What Was Supposed to Happen and What Happened .....	2-2
MAP PRODUCTS .....	2-3
What Are They? .....	2-3
What Is Their Future? .....	2-4
MAP CUSTOMERS .....	2-4
SPECIAL CHARACTERISTICS OF THE MAP PRODUCT DISTRIBUTION.....	2-5
RELEVANT STATISTICS.....	2-6
DLA O&M Budgets for Map Products .....	2-6
Map Product Workloads and Unit Costing .....	2-6

<b>Chapter 3 Feasibility Analysis .....</b>	<b>3-1</b>
DWCF CONSIDERATIONS .....	3-1
Appeal of Working Capital Funds .....	3-1
DWCF Criteria .....	3-2
LEGAL CONSIDERATIONS .....	3-5
TECHNICAL AND OPERATIONAL CONSIDERATIONS .....	3-6
Amending the MOA.....	3-6
Cost Recovery Method.....	3-6
Flexibility in Funding Surges .....	3-7
SUMMARY OF FINDINGS .....	3-7
<b>Chapter 4 Analysis of Impact on Customers .....</b>	<b>4-1</b>
DWCF ALTERNATIVE—CHARGING INDIVIDUAL CUSTOMERS .....	4-1
Reassignment of DLA O&M Funding .....	4-1
Customer Impact and Reaction .....	4-2
DWCF ALTERNATIVE—SUMMARY CHARGING OF CUSTOMER ORGANIZATIONS .....	4-4
Reassignment of DLA O&M Funding .....	4-4
Customer Impact and Reaction .....	4-4
DWCF ALTERNATIVE—CHARGING NIMA .....	4-4
Reassignment of DLA O&M Funding .....	4-4
Customer Impact and Reaction .....	4-4
SUMMARY OF FINDINGS .....	4-5
<b>Chapter 5 Analysis of Potential Costs and Benefits .....</b>	<b>5-1</b>
COST OF CURRENT PROGRAM .....	5-1
DIFFERENTIAL COSTS FOR TRANSFERRING TO THE DWCF .....	5-1
Types of Costs That Could Apply.....	5-1
Cost Estimates for Charging Individual Customers.....	5-2
Cost Estimates for Charging Military Departments and Others at a Summary Level.....	5-4
Cost Estimates for Charging NIMA.....	5-4

BENEFITS OF TRANSFERRING TO THE DWCF .....	5-5
Elimination of DLA Costs for Maintaining an O&M Account .....	5-5
Savings from Better Customer Discipline.....	5-5
Efficiency Savings That DLA Would Achieve.....	5-6
SUMMARY OF FINDINGS .....	5-6

## Appendix A Evaluations of Hypotheses

## Appendix B Abbreviations

## FIGURES

Figure 2-1. DoD Materiel Flow from Source to Customer .....	2-2
Figure 2-2. Map Product Mix.....	2-3
Figure 3-1. Total Cost Allocation .....	3-3
Figure 3-2. DLA Map Customers .....	3-4

## TABLES

Table 1-1. Assessment of DWCF Alternatives .....	1-6
Table 2-1. Customer Statistics in Percent .....	2-4
Table 2-2. O&M Budgets for Map Products (\$M).....	2-6
Table 2-3. Map Product Workload Statistics .....	2-6
Table 2-4. Unit Cost Estimates (\$M).....	2-6
Table 5-1. Costs (Current \$M) .....	5-1
Table 5-2. Reprogramming Costs (\$M) .....	5-3
Table 5-3. Replacing DADMS Costs (\$M).....	5-4
Table 5-4. Summary Level Costs (\$M).....	5-4
Table 5-5. Charging NIMA Costs (\$M).....	5-4
Table 5-6. Better Customer Discipline Savings (\$M).....	5-5
Table 5-7. Discounted Cost Totals (FY02–FY07) .....	5-6



# Chapter 1

## Overview

---

The Defense Logistics Agency (DLA) asked us to answer the question: Should the Department of Defense (DoD) transfer DLA map functions to the Defense Working Capital Fund (DWCF)? Currently, those functions are financed with operations and maintenance (O&M) funding. Based on our research, we recommend that DLA map functions remain O&M-funded and outside the DWCF.

However, if DoD decides to transfer DLA map functions to the DWCF, the best option for cost recovery is to transfer O&M funding to the National Imagery and Mapping Agency (NIMA) and permit DLA to charge NIMA for its services. The next best option is to transfer O&M funding to the military services, Defense agencies, and NIMA (for non-DoD customers, including foreign customers) and permit DLA to bill each organization at a summary level. The least preferred option would be to transfer O&M funding to individual customers and permit DLA to bill them for the map products they receive.

This report documents the findings and analysis that led to our conclusions and recommendations.

## GENESIS OF THE STUDY

DLA is a combat support agency. Two primary missions are the wholesale management of consumable items used by DoD and the wholesale distribution of items stored by DoD materiel managers. NIMA is also a combat support agency. Its mission is to provide timely, relevant, and accurate imagery, imagery intelligence, and geospatial information needed by the nation's military forces, national policy makers, and civil users.

In November 1997, Program Budget Decision (PBD) No. 70 transferred the supply management, distribution, and catalog production of map products from NIMA to DLA. PBD No. 70 also directed DLA to study a fee-for-service policy for these products and provide a report with recommendations to the Under Secretary of Defense (Comptroller).

DLA costs for managing, distributing, and cataloging consumable items that are not map products are funded by the DWCF—a revolving fund for collecting all costs for the materiel and its management through the price charged to customers. As part of the mission transfer, NIMA transferred a portion of its O&M funds to cover the costs of managing, distributing, and cataloging map products. NIMA retained the funds for materiel production that it controls.

---

## WHAT WE DID

DLA contracted with LMI to conduct the study and perform an independent assessment of alternatives for transferring the DLA map mission to the DWCF.

### Our Objectives

Our primary objective was to answer the basic question: Should DoD transfer DLA map functions to the DWCF? We also sought to answer two related questions in the PBD:

- ◆ Does the current O&M funding of one part of DLA's product management and distribution operations, which are otherwise DWCF-funded, cause any unnecessary cost?
- ◆ Would a fee-for-service policy for DLA map functions permit customers to make better decisions and lower the cost for map products?

### How We Approached the Problem

We considered three alternatives for transferring DLA map functions to DWCF and compared them to the status quo (i.e., continuing O&M funding). The three DWCF alternatives allow for different ways to recover costs:

- ◆ Charge individual customers.
- ◆ Charge the military services, other Defense agencies, and non-DoD customers at a summary level.
- ◆ Charge NIMA.

We assessed the feasibility of each alternative in terms of existing legal, financial policy, and technical or operational barriers and constraints. We reviewed planned changes to DLA map supply management, distribution, and catalog functions and assessed the impact on the alternatives.

We identified the economic advantages and disadvantages of each alternative and estimated costs and savings where possible. Finally, we considered the effect of each alternative on customer support.

### Assumptions

We made the following assumptions:

- ◆ NIMA will continue to operate the acquisition function for map products and pay for the cost of that function. Therefore, product acquisition costs are not part of this study.

- ◆ Any fees that DLA would charge for map products would apply equally to all customers—DoD and non-DoD. The size of fees could vary by product or product group.
- ◆ If a DWCF alternative were selected for funding DLA map functions, implementation would not be immediate because the mechanisms for collecting costs and assigning fees would need to be developed.

## WHAT WE FOUND

We interviewed many key stakeholders in map logistics, researched policy and procedure documents, and analyzed potential costs and benefits of transferring to the DWCF. As a result of these efforts, we compiled and evaluated a set of hypotheses regarding a funding transfer.<sup>1</sup> The evaluations are the basis for the following findings.

### Can DLA Transfer Its Map Mission to DWCF?

We found no insurmountable legal, financial policy, operational, or technical problem that prevents a transfer from O&M funding to the DWCF. However, problems do exist in these areas—some are so significant that they make the transfer an undesirable choice.

Most map products that DLA distributes are processed by NIMA to support international agreements for map exchanges, non-military emergency crises abroad, or intelligence and diplomatic missions. Although we found no law that would prohibit charging these customers for maps, NIMA does not want to jeopardize its valuable sources of foreign geospatial information by charging its international partners with DLA costs. Consequently, NIMA would choose to pay for the charges associated with that workload, which would be approximately 61 percent of the total NIMA product costs.

Looking at DWCF criteria, we found financial weaknesses with each of the transfer alternatives that would need to be resolved if a transfer alternative were selected. The most noteworthy weakness stems from the fact that all alternatives deal only with DLA costs and exclude NIMA costs to produce maps. Consequently, the buyer-seller relationship envisioned when using DWCF would not be realized because only 7.5 percent of the total costs are recovered.

DLA uses the Standard Automated Materiel Management System (SAMMS) to perform DWCF accounting and billing functions for the other commodities that it manages. However, the DMA [Defense Mapping Agency] Automated Distribution Management System (DADMS) that DLA uses for maps cannot perform the standard DWCF accounting and billing functions. Consequently, DLA would have to modify or replace DADMS to recover each customer's cost. Without

---

<sup>1</sup> See Appendix A for the hypotheses and our evaluations.

DADMS reprogramming or a system replacement, DWCF billing would have to be performed at the military department level or NIMA level. In addition, the memorandum of agreement (MOA) transferring the mission to DLA in 1998 would have to be changed if each customer is charged for maps. Changing the MOA could be difficult because of the prevailing DoD view that maps are and should be free. This issue is discussed more in our next finding.

## Will Map Customers Be Adversely Affected If the DLA Map Mission Becomes Part of the DWCF?

The customers of DoD materiel management functions are soldiers, sailors, airmen, and marines who provide for the nation's defense. Historically, the transfer of materiel management functions from direct O&M funding (i.e., free for customers) to DWCF funding (i.e., charge for customers) has initially met with cultural resistance. However, that resistance disappears when customers and DoD managers realize significant savings as a result of changing. The reasons for the savings are better ordering discipline by the customers and greater emphasis by suppliers on being more efficient and keeping costs down.

Map customer representatives expressed the following concerns to us:

- ◆ Maps are intelligence information—not materiel per se. Soldiers, sailors, airmen, and marines do not, and should not have to, pay for the intelligence information they need to do their jobs.
- ◆ Customers order maps to fill a contingency and operational planning requirement or an end-use requirement (e.g., training exercise, military research). Therefore, charging would be a nuisance and not change in any positive way their ordering practices. On the contrary, charging may cause a customer to delay or restrict an order, causing negative consequences.
- ◆ Many map customers are *only* map customers. Mechanisms would be needed to allow them to budget and pay for maps.
- ◆ Some map products do not go through DLA to the customers (e.g., time-sensitive products that go directly to customers). Customers may get confused when map products are free and when they are not.

Although these concerns have merit (particularly under the alternative where individual customers would pay for maps), similar concerns were raised with previous transfers of other commodities to the DWCF. We conclude that, in this case, a transfer of funding to DWCF, particularly in the alternatives where the military service or NIMA is charged for maps (and not a customer), would not significantly change customer behavior or customer support.

## Will the DLA Map Mission Operate Better as Part of the DWCF?

We found that DLA map functions, except for cataloging, are not fully integrated into DLA business processes. The functions have their own management information systems and stocking procedures. Except for a minor administrative cost, we found no unnecessary cost for executing the map functions with O&M funds where other functions are funded by the DWCF.

We found that a transfer of the DLA map function (an operations costing annually under \$30 million) to the DWCF would cause the following costs:

- ◆ The DLA map supply management and distribution functions do not have the accounting and billing capabilities to charge individual customers. In 5 years or more, DLA expects to include those functions in its system modernization program. Until then, DLA would need to spend between \$1.5 million and \$6 million to obtain the capabilities in the near term and incur additional recurring costs for system maintenance. (Since NIMA would be billed for the majority of the workload under any DWCF alternative, the projected expenditures would only be for accounting and billing a small part of the workload.)
- ◆ DLA may need to pay more to the Defense Finance and Accounting Service (DFAS) to perform services for billing map customers. Some customers may also incur DFAS charges that they do not now pay.
- ◆ For a DWCF application across the complete customer base, map only customers would need to incur training and other costs associated with establishing the ability for them to budget for, create, and monitor DWCF map financial transactions. (For example, a marine at Quantico, Virginia, who only orders maps for on-base schools and specialists conducting military analyses, would need to be trained and equipped with a financial capability to pay for maps.)

All previous costs apply to the alternative where individual customers are charged. The first cost also applies to the alternative where the military services and others are charged at a summary level. However, because a less precise accounting and billing capability would be required, the estimated costs would be less.

These costs would be justified if savings offset them. With regard to savings, we found:

- ◆ The savings from providing map functions with new business systems, which include cost accounting and billing functions, could potentially offset the associated costs. The savings would be from productivity improvements and reductions in system maintenance costs.

- ◆ Savings associated with better customer discipline would be limited to the alternative where a customer is charged and to the percent of time when the customer, and not NIMA, pays for the maps. Using NIMA product costs to compute the theoretical sales for that demand, the savings from a 10 percent reduction in that annual demand would be \$3.7 million. The savings amount to only 1.5 percent of the total sales of map products.

In summary, our cost analysis found that the total costs for all alternatives were relatively the same and none of the DWCF alternatives had any significant economic benefit.

## CONCLUSIONS AND RECOMMENDATION

Although we conclude that all alternatives for transferring to the DWCF are feasible, we also conclude that they offer no compelling reason for change and have significant drawbacks. We rank the alternatives from most to least preferred in Table 1-1.

*Table 1-1. Assessment of DWCF Alternatives*

Alternative	Customer support	Economic benefit	Other
Charge NIMA	No effect	None	Would not satisfy DWCF criteria but would allow NIMA to challenge DLA costs and possibly seek lower-cost services
Charge military services and others at a summary level	No effect	None (may incur costs to provide for accounting and billing)	Would not satisfy DWCF criteria
Charge individual customers	No improvement (may cause negative customer behavior)	Initially negative; little potential for significant savings	Would not satisfy DWCF criteria; would meet with strong resistance from the military services due to burdens placed on map customers

Based on our overall assessment of the alternatives, we recommend that the DLA map functions continue to be O&M-funded for these reasons:

- ◆ DLA map functions do not satisfy the four policy criteria for becoming a DWCF entity.
- ◆ The alternatives would provide little or no savings and would not improve customer support.
- ◆ Transferring map functions to the DWCF would require a costly and possibly uneconomical financial system modification or a complete software systems replacement.

We also believe that this recommendation will be valid in the future. The future trend for map products is toward digital products that could be distributed by DLA in less volume than paper products or distributed electronically over the Web or another communication mode. Therefore, although future business system modernization at DLA may overcome some costs associated with transferring to the DWCF, significant reductions in workload caused by digitization and electronic distribution may greatly reduce any potential savings for a future transfer in funding source.

Notwithstanding our recommendation, should DoD decide to transfer DLA map functions to the DWCF, we conclude that the best option is the alternative of charging NIMA for the following reasons:

- ◆ Since most map products are ordered through NIMA accounts, NIMA would receive the majority of the DLA charges in any alternative.
- ◆ This alternative could create a relationship where NIMA has the flexibility to seek other sources for the services that DLA provides if DLA could not keep its costs down.
- ◆ NIMA's large total obligational authority would also provide greater flexibility for dealing with surges in demand for map products.

## REMAINDER OF THIS REPORT

Chapter 2 presents more information on the DLA map mission—the 1998 transfer, map products, map customers, map distribution, and map statistics. Chapter 3 discusses the feasibility of the proposed DWCF alternatives in terms of financial policy, legal, and technical and operational considerations. Chapter 4 explains how the alternatives might affect customers. Chapter 5 discusses the economics of the alternatives.

## Chapter 2

# DLA Map Mission

---

## BACKGROUND

DoD uses maps to plan and execute its training and contingency operations. In 1972, the creation of DMA united the map operations of the military services in one agency. On October 1, 1996, DMA became NIMA.<sup>1</sup>

Before April 1, 1998, NIMA and DMA were responsible for distributing map products to customers throughout the DoD and other government activities. On that date, DLA assumed that responsibility in accordance with a MOA signed on December 12, 1996 and NIMA-DLA Joint Standard Operating Procedures published on June 1, 1998.

## Key Elements of the 1998 Mission Transfer

The following elements of the mission transfer to DLA are relevant to this study:

- ◆ NIMA inventory management, cataloging, and distribution functions and the associated resources for map products were transferred to DLA. Compilation, reproduction, and the associated resources remained with NIMA.
  - DLA would serve as the DoD Integrated Materiel Manager and distributor for all hardcopy map commodities.
  - Transferred personnel and work would be included in DLA human resource plans and programs.
- ◆ DLA continued providing hardcopy map commodities to customers as free items. (To support this element of the transfer, NIMA transferred O&M funds to cover one-time transfer costs and FY99 operating costs. For FY00 and future years, DLA budgeted for O&M funds to cover the cost of its map operations.)
- ◆ The transfer included the Map Support Offices (MSOs) and the government's contract with the Arnold Transportation Unit (ATU), a private firm

---

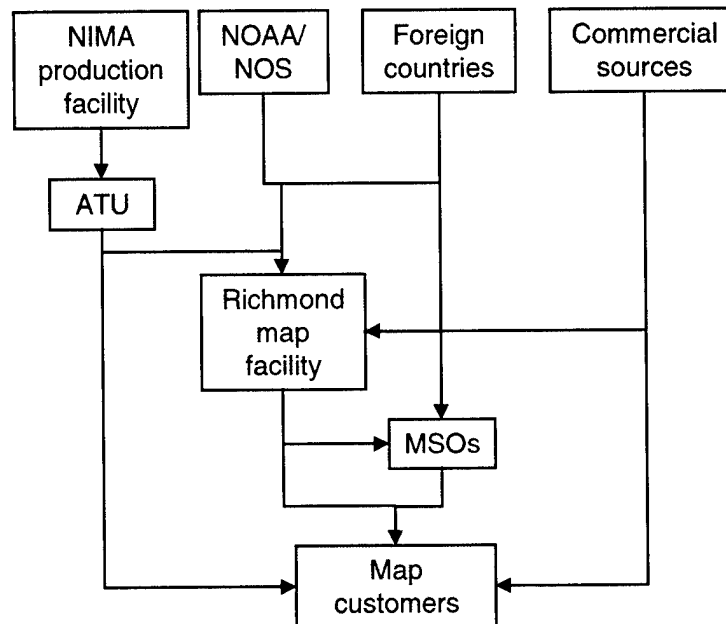
<sup>1</sup> NIMA was formed through the consolidation of the following: DMA, Central Imagery Office, Defense Dissemination Program Office, and National Photographic Interpretation Center as well as the imagery exploitation and dissemination elements of the Defense Intelligence Agency, National Reconnaissance Office, Defense Airborne Reconnaissance Office, and Central Intelligence Agency. For more information, visit NIMA's Web site at [www.nima.mil](http://www.nima.mil).



that ships maps from the NIMA Arnold production site to the map depot in Richmond, Virginia, and directly to customers.

Figure 2-1 shows the DoD materiel flow for map products from their four production sources to their customers. The sources are the NIMA facility in Arnold, Missouri; commercial contractors; the National Oceanic and Atmospheric Administration/National Ocean Service (NOAA/NOS); and foreign countries.

*Figure 2-1. DoD Materiel Flow from Source to Customer*



## What Was Supposed to Happen and What Happened

The initial plans for the mission transfer called for using SAMMS and the Distribution Standard System (DSS), DLA's standard systems, for inventory management and materiel distribution for map products. However, SAMMS could not accommodate some requirements for managing and issuing maps. Therefore, the DLA had to adopt the legacy DADMS as its map materiel management system.

DADMS could not interface with DSS and did not support DLA warehousing procedures. Therefore, DLA developed a new map warehousing system called the Map Locator System (MLS).

Consequently, except for the map cataloging operations at Defense Logistics Information Service (DLIS), map item management and distribution functions are not integrated with similar functions performed for other DLA-managed items at Richmond. Product center 9 at Defense Supply Center Richmond (DSCR-JN) performs item manager functions using DADMS. The other part of the Richmond map facility is the map distribution depot, which uses two warehouses to receive, store, and issue maps. The depot along and the MSOs comprise the Defense

Distribution Mapping Activity (DDMA), which, in turn, is part of the Defense Distribution Center (DDC), DLA's activity for performing DoD wholesale distribution function.

## MAP PRODUCTS

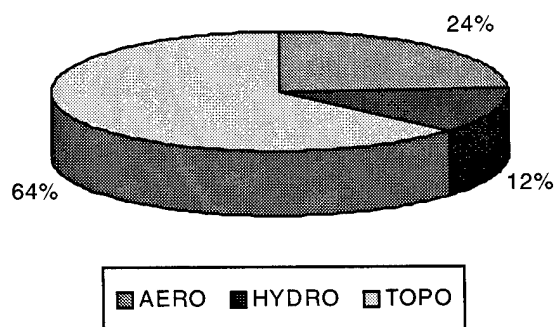
### What Are They?

Map products are divided into four federal supply classes:

- ◆ *Aeronautical products*, such as flight information publications (e.g., area arrival charts, enroute charts, planning books, and terminal approach procedures) and Federal Aviation Administration (FAA) products (e.g., holding pattern criteria and air traffic control handbooks)
- ◆ *Hydrographic products*, such as notices to mariners, nautical charts, and coastal charts
- ◆ *Topographic products*, such as country maps, regional maps, and city maps
- ◆ *Digital products*, including terrain, feature, and world vector shoreline data, arc digitized raster graphics, and digital point position database products.

Aeronautical products, primarily associated with the Air Force, are also used by Army, Navy, and Marine air units. Hydrographic products are normally associated with Navy. Army and Marine ground units use topographic products. Digital products are nonpaper media for aeronautical, hydrographic, and topographic products. Figure 2-2 shows the division of DLA map products among aeronautical, hydrographic, and topographic products (digital products are represented under the other products).

Figure 2-2. Map Product Mix



Source: DSCR-JN

## What Is Their Future?

The future of map products lies in NIMA efforts to replace hardcopy products with digital products. This trend is best seen in hydrographic products where NIMA is developing a digital nautical chart (DNC) system for the Navy and Coast Guard. In prototyping the DNC system, NIMA is not only using the latest technology to produce better map products but is using it to avoid copyright disputes with foreign countries.

NIMA is developing many digitized map products that can be made available through a secure Internet site. It is also exploring other communication means for rapidly transferring digitized maps to deployed military units. Projects, such as "Bosnia in a box" (a powerful laptop computer program containing highly detailed, multi-faceted regional data), clearly reveal NIMA's future potential ability to provide deployed forces with critical map information in a usable electronic system.

Although the Army's and Marine Corps' needs for hardcopy maps are projected to continue through fiscal year 2020 (FY20), the Navy has a goal for its ships to be equipped by FY07 to use only digital products. In September 2000, SSN-21 submarines will be so equipped. As NIMA continues to work with the military services and the Coast Guard to develop digital map data in a form that they can use, the DoD demand for paper maps should decrease.

## MAP CUSTOMERS

DLA distributes hardcopy and compact disk map products to the military services and the Coast Guard. However, DLA also distributes map products to other customers. Table 2-1 identifies the product workload by DSCR-JN customer categories.

*Table 2-1. Customer Statistics in Percent*

Customer category	Customer accounts	Requisitions	Quantity requisitioned	Manifests or shipments	Sales (based on NIMA prices)
Army	27	21	22	3	21.0
Navy	20	30	4	26	4.0
Air Force	15	14	3	14	4.0
Marines	5	8	6	25	7.0
Other DoD	4	18	52	10	61.0
Coast Guard	4	4	1	4	0.2
Other U.S.	6	2	1	16	0.3
Other	18	3	7	2	3.0

The category "Other DoD" includes customers with NIMA-assigned address codes. The customers are primarily foreign countries that order maps through NIMA. NIMA maintains international agreements with more than 150 countries that creates a barter relationship for exchanging maps freely between them and the United States. The intent of the agreements is to provide each country with maps needed for safety of flight and navigation at the lowest cost. The category "Other U.S." includes other federal agencies and departments, primarily the FAA and the Department of State and its embassies. The category "Other" includes other government entities (i.e., Department of Justice, Department of Interior, Bureau of Indian Affairs, Customs), commercial contractors, and foreign military sales cases.

## SPECIAL CHARACTERISTICS OF THE MAP PRODUCT DISTRIBUTION

DLA stores and issues map products as it does other commodities, although it does not charge for those services as it does for the services of the other commodities. However, that characteristic is not the only one that makes maps different from other commodities that DLA manages and distributes.

The following characteristics relate to this study:

- ◆ *Automated distribution.* All military units operating in an area need to have the most current and the same information in their map products. Therefore, as map products are updated, DLA automatically distributes the proper amounts of updates to the proper customer accounts. This service is similar to a subscription service for printed products.
- ◆ *Single government source.* Map item managers replenish their product stocks by sending orders to NIMA. NIMA prints the map at its production facility in Arnold, Missouri; contracts with a commercial producer; or obtains the map from NOAA/NOS or a foreign country. For time-sensitive products (such as flight information publications that have a 28-day update cycle), NIMA contracts for production and distribution. NIMA does not charge DLA for the compilation or production of map products.
- ◆ *Arnold Transportation Unit.* ATU is a commercial shipper that contracts with DLA to ship materiel from production to the Richmond map facility and directly to customers. As such, ATU is part of the map distribution system and its operating expenses are paid by DLA O&M funds.
- ◆ *Map Support Offices.* MSOs are attached to the commander-in-chiefs (CINCs). Each MSO has a different role, but they typically serve as a local source of supply for maps, perform training on how to order maps, aid in setting wartime levels for map products ashore and map allowances for ships, and act as map liaison for the CINC. The activities are

considered part of the map distribution system and are paid for with DLA O&M funds.

## RELEVANT STATISTICS

### DLA O&M Budgets for Map Products

DDMA costs are split approximately equally between labor and nonlabor costs (Table 2-2). Transportation and ATU are large nonlabor costs (approximately two-thirds of the nonlabor costs).

*Table 2-2. O&M Budgets for Map Products (\$M)*

Year	DSCR-JN	DDC (DDMA)	DLIS	Total
FY99	7.03	16.12	1.60	24.75
FY00	7.21	16.16	1.49	24.86

### Map Product Workloads and Unit Costing

Neither DADMS nor MLS has an accounting or billing capability. Each system only has limited data. We compiled workload data for this study from historical data that the Richmond map facility collected for FY99 and from 45 days of current on-line requisition and manifest data.<sup>2</sup> Table 2-3 shows a statistical summary of the data.

*Table 2-3. Map Product Workload Statistics*

Year	Requisitions received	Maps requested	Manifests	"Sales" (based on NIMA product prices in \$M)
FY99	618,278	17,436,291	94,211	—
FY00 (extrapolated from 45 day database)	496,000	24,800,000	104,000	307

We combined the data in Tables 2-2 and 2-3 to estimate unit costs for map activities. The estimates are shown in Table 2-4.

*Table 2-4. Unit Cost Estimates (\$)*

Year	Per requisition	Per map	Per manifest	Per \$1 "sale"
FY99 (actual)	40.04	1.42	262.74	—
FY00 (estimated)	50.16	1.00	240.01	0.081

<sup>2</sup> Requisition and map statistics do not include map products that the Richmond facility issues as part of automatic distribution.

NOAA/NOS not only sells maps to NIMA (for free issue throughout the DoD), it also sells maps to the public. Via the Internet, we determined the prices that the public is charged for the maps. The prices range from \$3.35 to \$108.75. (NIMA also sells subscriptions that range in price from \$15.00 to \$1,413.75. We did not have the data to compute comparable unit costs for automatic distributions.)

## Chapter 3

# Feasibility Analysis

---

In this chapter, we ask these questions:

- ◆ Do the potential DWCF alternatives meet the DoD criteria for financing a DWCF activity?
- ◆ Does any potential DWCF alternative violate a U.S. law, treaty, or international agreement?
- ◆ Do operational or technical problems make a DWCF alternative impractical?

## DWCF CONSIDERATIONS

The 1998 mission transfer from NIMA to DLA created a relatively small O&M-funded activity of under \$30 million within DLA's DWCF operation of about \$11 billion. In directing the transfer, PBD No. 070 also directed that DLA study the feasibility of transferring the hardcopy media function from O&M funding to the DWCF.

For almost half a century, working capital funds have been used to provide significant benefits to DoD. In 1945, a principal recommendation of the Hoover Commission was for DoD to use revolving funds to support commercial or industrial-like operations. That recommendation was enacted into law in 1949 as part of the National Security Act that gave the Secretary of Defense the authority to establish working capital funds. By July 1951, DoD began operations under this law.

### Appeal of Working Capital Funds

The working capital fund structure is intended foster a business-like customer-provider approach that

- ◆ enables the customer to make economical buying decisions,
- ◆ encourages the provider to become more cost conscious,
- ◆ identifies the full costs of support,
- ◆ measures performance on the basis of cost and output goals,

- ◆ fosters efficiency and productivity improvements,
- ◆ provides timely and accurate information to decision-makers at all levels to enhance the decision-making process, and
- ◆ relates the support infrastructure more closely with the force structure.

Creating a customer-provider or buyer-seller relationship is the leading principle for the successful operation of a working capital fund. This relationship greatly increases the customer's responsibility for properly determining support requirements and identifying the level of performance required from a support organization financed by working capital. Since the financial resources required by a working capital fund business to continue operations are directly related to its customers' demand for its goods and services, the customer wields great power over how a working capital fund activity conducts its operations, when the customer has a choice of providers.

Working capital funds offer an opportunity for improvement by allowing commercial, industrial, and service support functions to operate on a fee-for-service basis. By applying working capital funds to business-like areas, DoD can obtain many efficiencies achieved by the private sector from using commercial business management techniques, including the ability to increase cost visibility.

In addition to the benefits of a commercial-like business structure, the annual appropriation process does not restrict working capital funds. Consequently, within certain limitations, work can be carried from one fiscal year to the next. By allowing working capital fund activities to initiate actions and incur costs in advance of the receipt of funded orders from customers, these activities can finance items with long procurement lead-times without encumbering a customer's appropriated budget authority. Moreover, during periods of rapidly rising costs, a working capital fund activity with a cash corpus can protect its customers by absorbing the effects of price increases in the cash corpus and later recoup them after customers have budgeted for the higher costs.

## DWCF Criteria

The DoD *Financial Management Regulation* lists the following four criteria to charter and finance an activity as a DWCF component:

1. A measurable output (i.e., goods or services that are common to more than one military department or Defense agency)
2. An accounting system that can collect costs and identify them to outputs

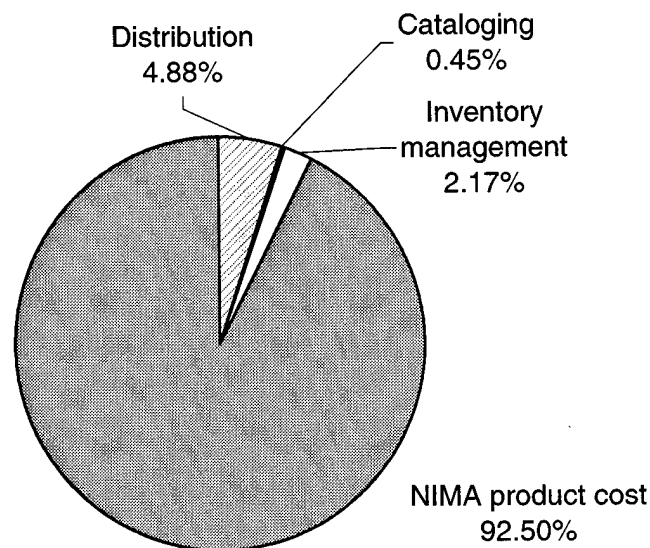


3. Identifiable customers to whom resources for products or services can be allocated
4. A buyer-seller relationship where the customer can influence cost by changing demand.

#### DWCF CRITERION 1: A MEASURABLE OUTPUT

The DLA mapping function has a measurable service output. However, a rough order of magnitude estimate of the total output cost of requisitioned map products only (Figure 3-1) illustrates that the DLA service output is only a small portion of the total output. The product cost in Figure 3-1 is the NIMA product cost on file at DSCR-JN. If the cost of non-requisitioned map products (e.g., subscriptions) were included, the DLA service output would be less than 7.5 percent of the total product output shown in Figure 3-1.

Figure 3-1. Total Cost Allocation



A DWCF output could be developed from the DLA service component of hard-copy media management. However, charging customers for only 7.5 percent of the total product cost would highly unlikely create a cost-conscious customer or foster a business-like arrangement between customer and provider.

#### DWCF CRITERION 2: A COST (AND *FINANCIAL*) ACCOUNTING SYSTEM

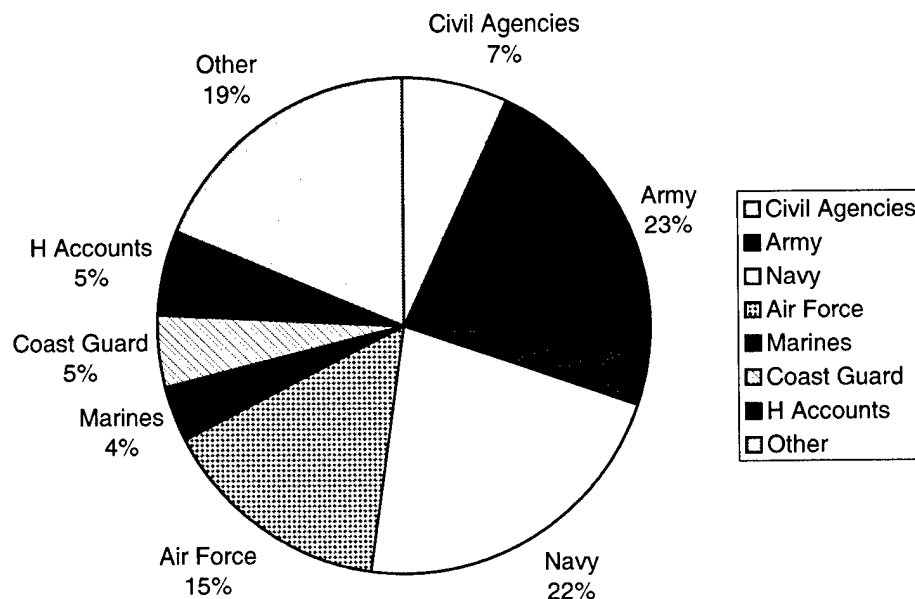
Before the DLA mapping function can be a suitable candidate for the DWCF, it requires a suitable cost accounting system and the ability to interface with DFAS systems that perform customer billings and collections. DADMS (the system that DSCR-JN uses to process requisitions) does not have a cost accounting system capable of collecting costs and identifying them to outputs. Also, of greater

significance, the DADMS system does not contain a means to track and bill automatically, either by requisition or by order. Programming the DADMS to accommodate tracking and billing would be a major overhaul of the system. Further, the military services would have to modify their requisitioning procedures for map products and establish financial accounts for map product customers who currently do not have them.

### DWCF CRITERION 3: IDENTIFIABLE CUSTOMERS

Customers of DLA map operations can be identified. Figure 3-2 identifies the major customer accounts of DLA map products.

*Figure 3-2. DLA Map Customers*



### DWCF CRITERION 4: A BUYER-SELLER RELATIONSHIP

Establishing a buyer-seller relationship that fosters cost reduction by both parties is a principal objective for incorporating an activity into the DWCF. When charged, buyers should scrutinize their purchases and exhibit better purchasing discipline (i.e., less waste in ordering materiel that may not be needed). To encourage sales and avoid losing customers to alternative sources, the seller would keep costs down so that the price charged is reasonable to the customer.

Since the alternative of charging individual customers establishes a buyer-seller relationship, it appears to meet this criterion. However, as we noted, NIMA would be the majority buyer. The military service customers buy for a specific use (e.g., training, military analysis) or to fill mobilization requirements. NIMA customer representatives referred to rules that each military service has to restrict unnecessary map ordering, even in the case of deployment. Therefore, it is unlikely that

charging individual customers would result in significant improvements in customer purchasing discipline. Consequently, since allowances and end use requirements control customer demand, customers would have little power to change their behavior in an effort to influence DLA to reduce its costs.

In the alternative where the military services, Defense agencies, and NIMA are charged at a summary level, a strong buyer-seller relationship is not established. Again, NIMA would be buying for most customers. The charges to the military services are relatively small (ranging from \$0.8 million for Navy to \$4.8 million for Army) when compared to their other annual materiel purchases. We would expect no change in customer discipline in this case and, for the same reasons, little power to reduce DLA costs.

In the alternative where NIMA is charged, the traditional relationship between supplier and individual users would not exist. However, a buyer-seller relationship would be established between a service provider (DLA) and a buyer of those services (NIMA), which has a strong interest in efficient map delivery services. The relationship would not improve individual customer ordering discipline, but it would give NIMA greater influence over DLA costs. In this alternative, if NIMA were dissatisfied with the cost of DLA services, it could seek an alternative source. Of the three alternatives, this one may have the strongest buy-seller relationship and the one least likely to disrupt individual customers.

## LEGAL CONSIDERATIONS

Our review of U.S. law governing map products found the following:

- ◆ No law prohibits or calls for the free issue of maps in the government.
- ◆ Title 10 states that NIMA will offer maps and charts at scales of 1:500,000 and smaller, except those withheld in the interest of national security, for public sale.
- ◆ Title 10 also states that NIMA will be the agent for developing and providing geospatial information used by the armed forces and *any other department or agency of the United States*.

NIMA has international agreements with at least 150 countries that call for the free exchange of map products between the U.S. and those countries. In addition to maintaining good relations with the 150 countries, the data gathered by NIMA demonstrates that the United States benefits from these international agreements because DoD typically receives more free map products than it provides.

# TECHNICAL AND OPERATIONAL CONSIDERATIONS

Representatives of DLA raised these three concerns:

- ◆ The mission transfer MOA (referenced in Chapter 2) would need to be changed.
- ◆ DLA would not be able to use its standard DWCF methodology to recover its Integrated Materiel Manager (IMM) costs.
- ◆ DLA does not have the financial flexibility it may need to respond to unprogrammed surges created by large-scale emergencies or crises.

## Amending the MOA

When DLA signed the MOA, it committed itself to the free issue of map products. If directed by a higher authority to change the agreement, the DLA would work with all parties to revise the agreement.

## Cost Recovery Method

Currently, DLA allocates its distribution and cataloging costs to the IMMs managing the items for which DLA performs those functions. In this case, Product Center 9 would be the only IMM.

DLA recovers its IMM costs (which include distribution and cataloging charges) by charging customers the standard price. The standard price includes a surcharge that is in addition to the acquisition price for an item. The surcharge is computed as the percent of acquisition price to provide for full cost recovery.

In the case of maps, DLA does not pay the acquisition price because NIMA issues maps to DLA free of production costs. NIMA does assign prices to map products. Although they are not true acquisition prices, they are acceptable surrogates if requisitioned map products were the only output and if requisitions or requisitioned quantities were a fair basis for assigning costs.

We found that:

- ◆ Charging on a requisition basis would not be equitable because approximately 25 percent of the requisitions are for one unit and another 25 percent are for more than 15 units.
- ◆ Charging by quantity requested would not be equitable because manifests may include one or many maps but have the same transportation cost.
- ◆ Separate cost standards would have to be developed for subscriptions (e.g., cases where map products are updated and automatically

distributed—pushed—to customers) and packs (e.g., Marine Expeditionary Unit packs and non-military emergency operations packs).

Consequently, equitable unit costing would be difficult to achieve for those alternatives where individual customers or the military services are charged. However, a pricing scheme could be developed.

## Flexibility in Funding Surges

Before the mission transfer, when a large-scale, unprogrammed surge for map product occurred because of an emergency or crisis, NIMA was able to realign its funds to cover additional printing and distribution costs. NIMA still has that flexibility with printing costs. However, because distribution costs are a small percent of the cost of an item, the DLA O&M budget for maps is much smaller than NIMA's O&M budget. Therefore, DLA has limited flexibility to change its budget to accommodate surges. If DLA map functions were under DWCF, surges could be accommodated within a significantly larger pool of DWCF funds.

## SUMMARY OF FINDINGS

We found that:

- ◆ None of the DWCF alternatives meets all DoD criteria for financing an activity under the DWCF.
- ◆ None of the DWCF alternatives violates U.S. law. If NIMA were to pay for the maps for foreign countries, no alternative would violate any international agreement.
- ◆ Operational or technical problems exist, but they can be overcome.

In summary, we found no insurmountably legal, financial policy, operational, or technical problem that would prevent a transfer from O&M funding to DWCF.

## Chapter 4

# Analysis of Impact on Customers

---

NIMA and DLA map customers obtain map products free except in cases of foreign military and public sales. No funds are transferred, and no accounts are charged.

DLA pays for map distribution with its O&M funds except when NIMA contracts with a commercial producer to produce and distribute map products and pays with NIMA O&M funds. NIMA pays for map product compilation and reproduction with its O&M funds or obtains map products through its bartering agreements with foreign countries. The bartering agreements can be considered to be obtained with O&M funds because the maps NIMA uses in the exchanges are compiled, produced, and distributed with O&M funds. In short, NIMA and DLA O&M funds, and not customer O&M funds, pay for the compilation, production, and distribution of maps in DoD.

If DLA were to transfer its map mission to the DWCF, O&M funds would still be involved. Only the organization that budgets, manages, and disperses the funds would change. In the following sections, we discuss changes each alternative would cause and how it would affect map customers.

## DWCF ALTERNATIVE—CHARGING INDIVIDUAL CUSTOMERS

### Reassignment of DLA O&M Funding

In this alternative, O&M funding for DLA's map mission would move to the following:

- ◆ Individual DoD map customers in the military services and Defense agencies
- ◆ NIMA for non-DoD map customers.

For DoD customers that have O&M accounts, the move would be an increase in their accounts; in many cases, this increase would be very minor. For others, the move would require that O&M accounts be established and personnel trained in how to use them. Most of those customers would probably order the current Web capability and be given a charge card to make map purchases.

Customers obtaining their maps through an MSO would pose a special problem. Sales procedures would have to be established, and MSO customers would require charge cards or other financial instruments to make their map purchases.

For non-DoD customers, DLA O&M funding authority would need to be returned to NIMA. NIMA would need to indicate accounting and billing divisions to DLA for it to justify future budgets. Obviously, accounting and billing for map products for foreign countries would be one category.<sup>1</sup> Another category probably would be for non-DoD departments and agencies. (At some point, the DoD Comptroller may want to consider transferring funding authority to non-DoD departments and agencies and charging them directly for map products.)

## Customer Impact and Reaction

If DoD customers were properly funded for their map purchases, the financial impact on them of being charged for maps should be minimal. Although proper funding of large map users should pose no problem, establishing accounts for a multitude of small users could be an onerous task that the military services may not want to undertake. Small users may be asked to absorb the cost of maps in their overall budgets for materiel. We interviewed customers who have no financial authority to purchase any materiel. They would need to be issued financial authority, or they would need to ask organizations that do have the authority to order maps for them.

The military services have not endorsed past efforts to study charging for maps. Customer representatives told us the military services would seek to prevent the adoption of that alternative for the following reasons.

### MAPS ARE UNIQUE

The military services consider maps a perishable form of intelligence, not a form of materiel. Maps are information essential to safety of life and victory on the battlefield. Maps are not like hardware products used to maintain weapon systems and personnel items consumed by soldiers, sailors, airmen, and marines. Maps are specific to an area of the world and they are critical to the military customers who must operate in those areas. For these reasons, most DoD personnel using maps consider them to be different from consumable materiel items.

However, we know that maps are not unique to the military. The general public uses maps and pays for them as it does for any product. Moreover, our armed forces pay working capital funds for the conventional ammunition, fuel, and clothing that they take into battle. They also pay for other items critical to safety of life, such as safety of flight parts and hazardous protective gear. For these reasons, we believe maps are not totally unique.

---

<sup>1</sup> Currently, DLA provides NIMA with cost data for cases of foreign military sales (not exchanges).

Despite the arguments on the issue of charging for maps, the fact is that a free-issue environment exists through the DoD. Therefore, for DLA not to jeopardize its good relations with its customers, it needs a compelling argument to change that environment.

#### CHARGING COULD CAUSE CUSTOMERS TO NOT GET THE MAPS THEY NEED

Map customer representatives expressed their concern that a lack of funds may cause customers to delay or restrict an order for maps. Any such actions could be fatal if an emergency or combat situation arose where the maps were needed.

However, crisis situations may also cause funding shortfalls in other critical items that are not free. Typically, those items are ordered, and funding is realigned or additional funding is requested to pay the bill. Customers order maps to fill a contingency and operational planning requirement or an end-use requirement (e.g., training exercise or military research). Moreover, the amount charged for the DLA cost on these products is a very small portion of the total product cost. Funding should not be an issue in either situation.

#### CUSTOMERS MAY BE CONFUSED ABOUT OR TRY TO CIRCUMVENT MAP CHARGES

Currently, not all maps flow through the Richmond depot to customers. NIMA contracts with some contractors to produce and deliver map products directly to customers. Normally, these products are time-sensitive products and their short cycle times do not allow for flow through a depot. If only map products being handled by DLA are not free, affected customers could be confused on products that are free.

Some customers, particularly when a critical need arises, contact their NIMA customer representative to find the quickest way to meet their need. The customer representative may generate a special reprint and ship it from NIMA's Arnold production site directly to the customer. Customer representatives are concerned that customers may attempt to do this more often as a means of avoiding a DLA charge (even though DLA pays for ATU shipments).

While both of these concerns can be overcome, they support the need for a compelling reason to make a transfer that would create even greater complexities in an already complex process.



---

## DWCF ALTERNATIVE—SUMMARY CHARGING OF CUSTOMER ORGANIZATIONS

### Reassignment of DLA O&M Funding

In this alternative, O&M funding for DLA's map mission would be moved to the following:

- ◆ Military services and Defense agencies for their map customers
- ◆ NIMA for non-DoD map customers.

The military services, Defense agencies, and NIMA would need to indicate accounting and billing divisions to DLA that it needs for future budgets.

### Customer Impact and Reaction

In this alternative, individual map customers would continue to operate as they do today. However, issues may arise among the DLA and the military services, Defense agencies, and NIMA on apportionment of costs.

## DWCF ALTERNATIVE—CHARGING NIMA

### Reassignment of DLA O&M Funding

In this alternative, DLA would move its entire O&M funding authority for its map mission to NIMA. NIMA would need to indicate accounting and billing divisions to DLA that it would need for future budgets.

### Customer Impact and Reaction

In this alternative, individual map customers would continue to operate as they do today. NIMA expressed concern that DLA should be responsible for funding its map resources, as NIMA is responsible for funding its resources. From the NIMA perspective, NIMA and DLA share the mission of providing map products to DoD customers—NIMA because of its expertise in imagery and geospatial technologies and DLA because of its expertise in distribution. As such, each is financially responsible for its share of the mission, particularly since NIMA will continue to fund its O&M costs. The concern also applies to the two previous alternatives; in all cases, NIMA would be billed for most DLA charges.

## SUMMARY OF FINDINGS

We found important customer concerns with each alternative except the status quo. However, similar concerns were expressed when other commodities changed from O&M funding to funding by a revolving fund. It is noteworthy that we did not find any evidence that a change in funding for DLA map operations would greatly improve the support that customers are receiving. Without a compelling benefit from a change, we would expect resistance by the military services and NIMA to be significant.

## Chapter 5

# Analysis of Potential Costs and Benefits

---

This chapter identifies the costs and benefits for each alternative. The following savings and costs estimates are rough order of magnitude estimates.

## COST OF CURRENT PROGRAM

The status quo would continue O&M funding of DLA map functions. Table 5-1 displays a projection of O&M costs for the inventory management, distribution, and cataloging functions performed by DLA.

*Table 5-1. Costs (Current \$M)*

Totals					
FY02	FY03	FY04	FY05	FY06	FY07
25.3	25.7	26.1	26.7	27.3	28.4

## DIFFERENTIAL COSTS FOR TRANSFERRING TO THE DWCF

Alternatives can be compared in a cost-benefit analysis on the basis of their respective total costs or differential costs (i.e., costs that one alternatives incurs that other alternatives do not incur or the difference in costs if all alternatives incur a cost but for different amounts). For this analysis, we identified types of differential costs but present estimates in terms of total costs to give a perspective of the relative size of cost increases.

### Types of Costs That Could Apply

The following costs are applicable to the DWCF alternatives and are not applicable to the status quo.

### COST OF PROVIDING A DWCF ACCOUNTING AND BILLING CAPABILITY

The direct O&M funding in the status quo does not require any tracking of costs by customer or any customer billing. However, for the DLA map functions to be transferred to the DWCF, two elements are required—a cost accounting system and the ability to interface with DFAS systems that perform customer billings and collections. As previously noted, DADMS does not have a cost accounting capability that can collect costs and identify them to outputs. DADMS is a

Cobol-based legacy system that had annual operating costs of \$3.9 million in FY99, more than 57 percent of the DSCR map program costs. Currently, the DADMS does not have a means to track requisitions and bill customers automatically.

#### ADDITIONAL DFAS COSTS

The current free issue of maps means that no DFAS financial transactions and processing are required. If customers were charged for maps, DFAS would need to handle the accounts and financial transactions between buyer and seller. DFAS would charge its own fee-for-service to both parties.

#### COSTS TO TRAIN CUSTOMERS ON USE OF DWCF AND TO ESTABLISH A MEANS TO ORDER MAP PRODUCTS

Currently, some map customers only order maps and do not order any other materiel from DLA. For example, of 2,625 Air Force map accounts, 11 percent are base supply accounts that DLA routinely supplies, 82 percent are map-only customer accounts, and the remaining 7 percent are miscellaneous accounts. However, the map-only accounts, which make up 41 percent of the "sales" (based on NIMA product prices), do not routinely order other materiel from DLA. (Their "sale price" per requisition is \$113 compared to a price of \$480 for base supply accounts. They order an average of 23 maps per year compared to 58 maps for base supply accounts.) Each map-only customer would need a financial account to pay for maps, or each would need to be allocated funds from an existing account to pay for maps. Either case would require instruction.

#### Cost Estimates for Charging Individual Customers

All previous costs apply to this alternative. We computed and presented two sets of estimates for the cost of providing an accounting and billing capability because this work could be done by reprogramming DADMS or replacing it. We developed a range for the estimate of the additional DFAS cost to DLA. We did not estimate the DFAS cost to a customer and the costs of providing DWCF training and establishing new DWCF accounts. The conditions and rules for this effort would determine those costs, and those conditions and rules are not known.

#### DFAS COST TO DLA

We started with the DFAS billing charges to Defense Printing at Mechanicsburg, Pennsylvania, since their operations and products are very similar to map operations and products. We adjusted for differences in volume and computed an estimate of \$466,000 annually. (The DFAS support for map operations would be different from its support for print operations because Richmond interacts with DFAS for other DSCR-managed commodities. Therefore, the increase could be less than our estimate, depending on how great DFAS views the workload increase.)

## OPTION A: REPROGRAMMING DADMS FOR CUSTOMER BILLING CAPABILITY

Reprogramming the DADMS to accommodate tracking and billing would be a major overhaul of the system and cost approximately \$1.5 million. In addition to the DADMS reprogramming investment, we estimate a recurring cost of four additional General Schedule, level 5 (GS-5) positions would be required to perform the added manual workload in the budget and inventory management areas at DSCR. Finally, the military services would have to modify their requisitioning procedures for map products and establish financial accounts for map product customers who currently do not have them (Table 5-2).

Table 5-2. Reprogramming Costs (\$M)

	FY02	FY03	FY04	FY05	FY06	FY07
<b>Non-recurring costs</b>						
DADMS reprogramming	1.5	0.0	0.0	0.0	0.0	0.0
<b>Recurring costs</b>						
Mapping program	25.3	25.7	26.1	26.7	27.3	28.4
Data entry (financial)	0.1	0.1	0.1	0.2	0.2	0.2
DFAS	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Total	25.9	27.8	26.7	27.4	28.0	29.1

## OPTION B: REPLACING DADMS WITH AN ENTERPRISE RESOURCE PLANNING SYSTEM

An alternative to reprogramming the DADMS system to create a customer billing capability is to replace it with a commercial off-the-shelf (COTS) enterprise resource planning (ERP) package. A rough order of magnitude estimate for a COTS ERP that includes the necessary inventory management, distribution, and financial capability is about \$6 million.<sup>1</sup> If a financial package were purchased in the COTS suite of software, most accounting and billing processes would be automated, and extra workload would be minimal. Except for the initial file build, current staffing could perform the additional work. This investment could be offset by significant savings in DADMS legacy system costs and cost avoidance of a DSS installation for the mapping program. (A 24 percent savings in DADMS maintenance and operating costs over the FY02–FY07 program horizon would pay back the investment in an ERP system.) Of course, the acquisition of an ERP must be balanced with the cost-effectiveness of including the mapping activity in the DLA's Business Systems Modernization (BSM) program (Table 5-3).

<sup>1</sup> This cost would be much less if the DLA systems modernization program installs an ERP product for other DSCR product centers and Product Center 9 would be an add-on with little additions required.

*Table 5-3. Replacing DADMS Costs (\$M)*

	FY02	FY03	FY04	FY05	FY06	FY07
<b>Non-recurring costs</b>						
ERP solution	6.0	0.0	0.0	0.0	0.0	0.0
<b>Recurring costs</b>						
Mapping program	25.3	25.7	26.1	26.7	27.3	28.4
Data entry (financial)						
DFAS	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
<b>Non-recurring savings as a result of ERP solution</b>						
Recurring savings (15.1%)	1.1	1.1	1.2	1.2	1.2	1.2
<b>Total</b>	<b>30.7</b>	<b>31.1</b>	<b>25.4</b>	<b>26.0</b>	<b>26.6</b>	<b>27.7</b>

## Cost Estimates for Charging Military Departments and Others at a Summary Level

This alternative would avoid extensive system reprogramming and acquisition costs for a new accounting and billing capability as well as DFAS charges. However, the military services, Defense agencies, and NIMA would require DLA to perform financial accounting to validate its fees and allow them to budget for future fees. We estimate that cost to be minor and equal to the data entry cost in sub-alternative A (Table 5-4).

*Table 5-4. Summary Level Costs (\$M)*

Recurring costs	FY02	FY03	FY04	FY05	FY06	FY07
Mapping program	25.3	25.7	26.1	26.7	27.3	28.4
Financial tracking	0.1	0.1	0.1	0.2	0.2	0.2
<b>Total</b>	<b>25.4</b>	<b>25.8</b>	<b>26.2</b>	<b>26.9</b>	<b>27.5</b>	<b>28.6</b>

## Cost Estimates for Charging NIMA

This alternative would also avoid the costs of charging individual customers. However, it would have the same reduced accounting cost as the previous alternative since NIMA would require DLA to perform financial accounting (Table 5-5).

*Table 5-5. Charging NIMA Costs (\$M)*

Recurring costs	FY02	FY03	FY04	FY05	FY06	FY07
Mapping program	25.3	25.7	26.1	26.7	27.3	28.4
Financial tracking	0.1	0.1	0.1	0.2	0.2	0.2
<b>Total</b>	<b>25.4</b>	<b>25.8</b>	<b>26.2</b>	<b>26.9</b>	<b>27.3</b>	<b>28.4</b>

## BENEFITS OF TRANSFERRING TO THE DWCF

The following are benefits that apply to the DWCF alternatives but not to the status quo.

### Elimination of DLA Costs for Maintaining an O&M Account

PBD No. 70 identifies the possibility of an additional cost to DLA for maintaining an O&M account in its otherwise DWCF environment. As noted in Chapter 2, map functions are separate from DWCF functions. Consequently, DLA has not incurred expenses in separating costs for the two areas. With only minor administration expenses associated with managing an O&M account, the potential benefit of eliminating O&M funding would be insignificant.

### Savings from Better Customer Discipline

This benefit would only occur if individual customers were charged. To estimate the potential savings, we started with DoD customers, assuming that non-DoD customers would be funded by NIMA. We use NIMA product prices to compute and evaluate "sales" to DoD customers. We removed requisitions for one map because we reasoned that no customer discipline could reduce the requested quantity for these requisitions. We also removed requisitions for more than 100 maps since they were for filling mobilization requirements and the demand, which is principally operational, for these maps would not change if they were not free.

Using the remaining sales base, we tested a range of potential reductions in maps demanded because of improved customer discipline. The range is from 1 to 10 percent, but the high percentages are less likely to occur. (Stockpiling a perishable product, such as maps, for reasons other than mobilization planning is unlikely.) The results showing savings in NIMA and DLA costs are in Table 5-6.

*Table 5-6. Better Customer Discipline Savings (\$M)*

Type	Parametric range of savings		
	1%	5%	10%
Reduction in demand			
Resulting reduction in sales	\$0.4M	\$1.8M	\$3.7M
As a percent of total sales	0.1%	0.6%	1.2%
Reduction in DLA costs (based on percent of sales)	\$30K	\$150K	\$300K

These estimates are optimistic because their computation does not account for the fact that only whole maps can be issued. More importantly, we believe the risk that customers might postpone or restrict ordering their map requirements may outweigh the potential economic benefit shown in Table 5-6.

## Efficiency Savings That DLA Would Achieve

Our discussions with DLA personnel did not reveal any change that DLA would make in its map business if funding were transferred to the DWCF. Depot personnel did mention a problem with making a warehousing improvement with O&M funds, but the DLA Comptroller was working on a solution. We believe that DLA will continue to make efficiency improvements in map operations regardless of whether the operations are O&M-funded or DWCF-funded.

## SUMMARY OF FINDINGS

Table 5-7 summarizes the total discounted costs of implementing each alternative. (We used a discount rate of 4.9 percent based on Office of Management and Budget guidance.) The table shows no significant increase in costs between the alternatives.

*Table 5-7. Discounted Cost Totals (FY02–FY07)*

Alternative	Total discounted costs (\$M)
Status quo	142
Charge individual customers	A–146 B–150
Charge military services (and NIMA)	142
Charge NIMA	142

Savings may be available from improved customer discipline in the alternative that charges individual customers. However, the percent would be small because of the nature of the requirements that generate customer requests. The savings from a 1 percent reduction in demand, discounted over the same period as costs, would be \$2 million, which is less than the \$4 to \$8 million increase in costs to execute the alternative. Although a 5 percent reduction would be \$10 million, which is greater than the projections for cost increase, its likelihood of occurring is much less.



## Appendix A

# Evaluations of Hypotheses

We interviewed officials in DLA headquarters, DoD Office of the Comptroller, DSCR, DSCR-JN, Defense Distribution Center (DDC), DDMA, NIMA, NOAA/NOS, the military services, Defense Logistics Information Service (DLIS), and Document Automation and Production Service. NIMA officials included DLA liaisons, customer service representatives, managers of foreign country agreement and foreign military sales, and persons involved in future NIMA initiatives for map products.

From these interviews, we identified several issues involved in a transfer to the DWCF and formulated hypotheses. We researched the hypotheses to arrive at an evaluation for each. The resulting evaluations are the basis for the findings in the study (Table A-1).

*Table A-1. Evaluations*

Hypothesis	Finding	Assessment
U.S. law requires that maps be furnished free as a matter of safety in the air and on the seas.	No law mandates free issue of maps.	Not a constraint for any DWCF alternative.
The pricing of maps is a matter of international negotiations based on copyright laws and is more than cost recovery.	NIMA is working with foreign countries on the pricing and exchange of maps. NIMA handles map foreign military sales.	Not a problem if NIMA accepts charges for foreign countries.
U.S. law requires that maps be offered for sale.	10 U.S.C.A. § 455 requires that NIMA offer maps, charts, and geodetic data (except classified products) for public sale.	Not a constraint for any alternative.
Map operations have outputs that cannot be identified.	Map products and catalogs are identifiable outputs of Richmond and Battle Creek operations. MSOs perform liaison and one-time tasks (contingency support) that are less identifiable.	Not a problem if MSO costs are treated as a cost of doing business.
DLA does not have the needed accounting and billing capability.	DADMS does not comply with Military Standard Requisitioning and Issue Procedures and does not have the needed capability. DADMS is not part of BSM.	A definite short-term problem for DWCF alternatives requiring detailed accounting and billing.

*Table A-1. Evaluations (Continued)*

Hypothesis	Finding	Assessment
Customer accounting and billing systems would need to be changed to accommodate maps.	Customers requisition through their supply systems and the Web. Retail supply systems have accounting and billing procedures. Packs are not requisitioned. Automatic distributions to subscribers are not requisitioned, but they are not a problem for publication services that are under DWCF.	A solvable problem requiring procedures for packs and Web requisitioning, and training and equipping of map-only customers.
Map operations have identifiable customers that cannot be charged.	DSCR-JN can identify map requests by customers. MSO issues maps like NOAA/NOS aeronautical and nautical chart sales agents.	A solvable problem that would require the development of a sales process for MSOs and their customers.
Charging for maps will cause DLA to manage its inventory more efficiently to reduce map costs.	DLA ability to control its costs is limited. Map inventories are managed by DLA, but their size is dictated by NIMA. Map operations (such as MSOs) are not controlled by DLA.  Alternative sources do not exist that would influence DLA to reduce costs outside of its normal management improvement program.	An argument for status quo and DWCF alternatives.
Charging for maps to only recover DLA costs does not provide customers with full financial visibility.	If the purpose of charging is to make customers aware of the costs of their decisions and, thereby, influence those decisions, then charging for only part of the costs contradicts this purpose.	Partial charging is feasible but is not a best business practice.
Charging individual customers would not influence customer demand.	Customer demand is based on allowances and other levels established by contingency planners or for end use (training, exercises, or analysis). Just-in-case demand occurs but is policed during contingencies.	Charging individual customers may cause negative behavior; that is, customers do not maintain their allowances (but this assessment also applies for other commodities under DWCF).
Charging military services does not establish a buyer-seller relationship.	If billing at a macro level (e.g., military service, State Department, Coast Guard), map customers will not be "buyers" in a strict sense. However, military services and other billed organizations can establish policies and procedures governing customer-buying practices.	Provides, at best, a weak buyer-seller relationship.
Changing NIMA does not establish a buyer-seller relationship.	Most map customers are not NIMA activities. This billing alternative would not establish a buyer-seller relationship. However, it would give NIMA flexibility in deciding who should manage and distribute maps.	Does not provide a customer-provider relationship but does provide a relationship where NIMA can hold DLA accountable for its costs.
Program enhancements are easier to accomplish under DWCF than O&M funding.	Warehouse enhancement involving new racks is delayed because of funding source.	Programming procedures are in place to overcome this problem.

Table A-1. Evaluations (Continued)

Hypothesis	Finding	Assessment
Giving money to customers to pay for maps will require a budget for the first time, and some monies budgeted for maps may never get to users.	Budgeted monies may be moved to higher priority or more urgent needs.	A problem but true for all commodities under DWCF.
Charging by historical percent of workload would be challenged by military services as being too imprecise.	Workload mix (map requisitions, subscriptions, packs) and range for level of effort per requisition make a percentage approach imprecise.	Problem would be mitigated by small dollar values of map charge computed to total budgets for materiel.
NIMA may limit funding of map operations or seek approval authority over expenditures.	DLA did not receive adequate funding in the transfer. NIMA does not have distribution expertise and this could cause them to underestimate the cost of DLA services.	DoD Comptroller would mediate and ensure bill would be paid.
Transfer MOA calls for free issue.	MOA does call for free issue, and all stakeholders agreed.	MOA can be changed.
Having an O&M-funded operation in a DWCF business area increases costs.	DSCR and DDC acknowledge additional work in preparing a budget in a non-DWCF environment.	No major additional cost exists because DLA map operations are separate from similar operations for other DLA commodities.
Addition of accounting and billing in DLA's map management systems would be costly.	DSCR considers systems too old to incorporate accounting and billing procedures. If system upgrade is not possible, system needs to be replaced.	Needs to be included in the analysis.
DFAS would charge for new financial transactions.	Charging individual transaction would add new financial transactions.	Could be a new recurring cost if billing is required by individual customer.
Charging for maps will cause customers to exercise better discipline in ordering maps.	We have no evidence that waste exists. Procedures limit customer orders (allowances).	This saving should be part of the benefit analysis, although it probably would be at a very low rate.
Map products involve safety of life, which is more important than cost recovery.	Maps are necessary for safety of flight and safety on the seas. Other commodities, such as flight-critical aircraft parts, are charged for.	No effect; charging and the nature of the application of product are independent.
Customers will not order the maps they need if charged.	Customers might postpone or restrict orders to save money and, thereby, not maintain prescribed allowances.	A potential negative impact of charging individual customers.
Customers will circumvent charges by contacting NIMA to request maps.	This possibility should not occur, but NIMA customer representatives gave indication that it is.	This loophole would need to be closed.
Customers may be confused about map products they need to budget and pay for.	NIMA contracts the production and distribution of some map products. In the alternatives, this approach would not change and the products would remain free issue.	A potential problem.

## Appendix B

# Abbreviations

---

ATU	Arnold Transportation Unit
BSM	Business Systems Modernization
CINC	commander-in-chief
COTS	commercial off-the-shelf
DADMS	DMA Automated Distribution Management System
DDC	Defense Distribution Center
DDMA	Defense Distribution Mapping Activity
DFAS	Defense Finance and Accounting Service
DLA	Defense Logistics Agency
DLIS	Defense Logistics Information Service
DMA	Defense Mapping Agency
DNC	digital nautical chart
DoD	Department of Defense
DSCR	Defense Supply Center Richmond
DSCR-JN	DSCR Project Center 9
DSS	Distribution Standard System
DWCF	Defense Working Capital Fund
ERP	enterprise resource planning
FAA	Federal Aviation Administration
FY	fiscal year
GS-5	General Schedule, level 5

<b>IMM</b>	<b>Integrated Materiel Manager</b>
<b>LMI</b>	<b>Logistics Management Institute</b>
<b>MLS</b>	<b>Map Locator System</b>
<b>MOA</b>	<b>memorandum of agreement</b>
<b>MSO</b>	<b>Map Support Office</b>
<b>NIMA</b>	<b>National Imagery and Mapping Agency</b>
<b>NOAA</b>	<b>National Oceanic and Atmospheric Administration</b>
<b>NOS</b>	<b>National Ocean Service</b>
<b>O&amp;M</b>	<b>operations and maintenance</b>
<b>PBD</b>	<b>Program Budget Decision</b>
<b>SAMMS</b>	<b>Standard Automated Materiel Management System</b>